

PATHWAYS

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MATHS CLUB IDEAS

Quandary with Quadratics

Solving quadratic expressions and equations, has been a big bugbear with students. With a few tricks here and there, I am sure, they would think it is real fun and will not find themselves in a quandary any more. Let's take a quadratic expression to be factorised.

$$x^2 - 16x - 465$$

When the middle number (-16) has to be obtained as a sum by splitting up -465 into two factors and adding them up, the large product can easily put you off. Here is an elegant solution for the same. The expression is of the form $ax^2 + bx + c$.

Where $a = 1$; $b = -16$; $c = -465$

The sum of the factors of -465 ought to be -16 .

$$\text{Find } -\frac{b}{2a} = -\left(\frac{-16}{2}\right) = +8$$

$$\text{The product of the roots is } \frac{c}{a} = \frac{-465}{1} = -465$$

$$\text{Therefore } (8+q)(8-q) = -465$$

$$64 - q^2 = -465$$

$$q^2 = 529$$

$$q = \pm 23$$

The roots are $(8+23)$ and $(8-23)$
or 31 and -15

The factors are $(x-31)(x+15)$ (changing the signs of 31 and -15). Work this out for $ax^2 + bx + c$ and find out how it functions.

2 This method of factorising any simple quadratic expression might seem funny, but it helps you to avoid making silly mistakes while grouping—especially, when you are dealing with negative numbers.

$$\text{Eg } 6x^2 - x - 1$$

$$\text{The sum of the roots} = -1;$$

$$\text{Their product} = -6.$$

Factors of -6 to give a sum of -1 , are -3 , $+2$

$$\text{Rewrite } 6x^2 - x - 1 \text{ as } (6x - 3)(6x + 2)$$

Note how you are writing down the factors.

The first term is written in the first degree as $6x$.

The split up factors to be added to the $6x$ are written as $(6x - 3)$ and $(6x + 2)$

Now, take out the common factor (if there is one) and discard them, in each of the factors.

$$(6x - 3) = 3(2x - 1) \quad \text{discard 3}$$

$$(6x + 2) = 2(3x + 1) \quad \text{discard 2}$$

The factors are therefore $(2x - 1) (3x + 1)$

Do not however make the mistake of writing down as follows :

$$6x^2 - x - 1 = (6x - 3) (6x + 2)$$

This would give a wrong equality.

3. Vedic mathematics abounds in examples for solving quadratic equations, through just a few *sutras*. The most common one is the sum of reciprocals.

$$\text{Eg. } x + \frac{1}{x} = \frac{50}{7}$$

In the usual method, we would take the LCM, form a quadratic equation and solve it, as follows :

$$7x^2 + 7 = 50x$$

$$7x^2 - 50x + 7 = 0$$

$$7x^2 - 49x - x + 7 = 0$$

$$7x(x - 7) - 1(x - 7) = 0$$

$$(7x - 1)(x - 7) = 0$$

$$x = \frac{1}{7} \text{ or } x = 7$$

Through Vedic mathematics, this can be done mentally in one step.

$$x + \frac{1}{x} = 7 + \frac{1}{7} \quad (\text{Sum of reciprocals of a number on both sides})$$

$$\text{Therefore } x = 7 \text{ or } x = \frac{1}{7}$$

Try doing more difficult problems like this.

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Magic Word Cards

You will need

- * Sheets of white paper,
- * A white candle,
- * A jar of very thin black paint,
- * A paint brush,

Make the cards this way :

1. Choose words that the children are learning at the moment e.g. dog.
2. Use the candle to draw a dog on each of the sheets of paper. Underneath, next to each picture, use the candle again to write the word dog. You will need to press down quite firmly with the candle.

Play the Game

Ask the child to discover the magic words and pictures by painting gently over the wax treated paper with the thin black paint. Small children are always amazed to see the magic words appearing.



The River Front of My Town

An Environmental Studies Project for Standard XI

—by Jayshree Oza

[In the first part of this article, printed in the February 1990 issue of Pathways, the author, currently Headmistress Apeejay School NOIDA, described various activities undertaken by about 18 Students of Class XI, Bharatiya Vidya Bhawan, Delhi in 1987-88, when she was Counsellor/Social Worker at that school. The activities focussed on a detailed, multi-faceted study of a 48 km stretch of the river Yamuna at Delhi. They included visits to the river front, the waterworks, industries and an effluent treatment plant, investigations into the pollution of the river and its control, exploration of the life-styles of people living near the river and of the rituals and festivals associated with the river. Such enquiries led the students further afield to find out about other rivers of the world, to compare and contrast them. Now, read on.....]

The river had come alive for the students, bringing with it many pleasant and some uneasy memories. A lot of sharing, personal experiences and the joy of learning together and looking for answers gave each one a sense of achievement.

For the teacher there could not be a greater joy than to see the students so inspired as to raise questions and look for their answers. In such situations, the teacher becomes a moderator, a motivator and a helping hand. In this project, the teacher was helped and supported by Bharatiya Vidya Bhawan, Ankur and INTACH in all possible ways, especially in terms of planning, locating research material, identifying resource agencies and their resources, establishing contacts, and motivating students.

"The river front" offered insights and awareness to the school-going child on a variety of challenging issues and subjects, making them fascinating as he/she had the choice of working on topics/activities of his/her own interest. This enhanced their participation and involvement in

the project. The project became an exciting path to experimental learning.

Among the documents prepared and presented by students were :—

Project files :

Day-to-day accounts and observations.
Files on a number of other rivers of the world.

Skits, Plays :

Depicting life styles, sights and sounds on the river bank.

Questionnaires :

For interviewing people on different aspects of their lives.

Collage :

A newspaper collage on the Yamuna, for which students collected clippings from various papers for four months.

Charts :

- Historical City ?
- Bridge next to Red Fort on the River.
- Yamnotri — the river at its source.
- Illustration of 17 drains opening into the river.
- Newspaper collage.
- Waterborne diseases.
- Water distribution system.
- "Every drop counts" — a water conservation chart.
- Water purification.
- Festival chart — which festivals having direct links with the river are celebrated in which months.

Evaluation :

Projects which aim at sensitizing the child and seek his/her most creative self-expression cannot be satisfied with routine examination rituals for evaluation. As the process of such a project is so dynamic, the product must have very unique expression, and evaluation.

A word of caution here. Totally measurable or quantifiable results cannot be obtained, yet through an ongoing evaluation process some amount of insight into the children's thought processes can be gained, which, of course, is of lasting value.

I. Pre-Project Attitudes :

A brain storming exercise on the very first day of the programme brought forth some comments from the students :—

- Oh ! Why should we study about the Yamuna ?
- Will it be interesting ?
- I know every thing about the river.
- It will be so dirty Since we are planning the programme we can avoid all that.
- Can we not take up a study of some other places, where some other environment groups are already working ?
- But we are an environment group which hopes to bring awareness and be aware. Why should we not start a study of our own ?
- What will we do for six months ?

II. Mid Term Evaluation :

1. Are you interested in the project you are doing ? Why ?
2. How many visits have you made on your own to your area of study ?
3. Name all the new sights and sounds you have experienced in this programme.
4. Name the industries you have visited. Describe the children working there.
5. Is there any answer to industrial pollution ? Why is it not popular ? Which is the law enforcement agency dealing with it ?

6. Draw the river from start to finish in Delhi and show the seventeen drains which pour effluents into it.

III. Some comments made by students after and during the project :

- Have you ever shared your water with cows and dead bodies ?
- I will not be able to cross the Yamuna bridge without thinking consciously about it.
- Now every river in the world fascinates me. Do all have such a rich history ?
- Well, it is so sad at times, knowing all we do now, but it prepares me for future and I love Delhi even more.
- There was a lot of learning, yet we enjoyed every moment of it.
- Do you know that the water we drink is only partially treated, ? They have no facility to clean out some of the chemical pollutants.
- It seems our town planners are not sure what they want - but they do have some good ideas.
- There are some very modern and effective instruments to forecast floods.
- We must use our water resources with more care and better planning must go into managing it.
- How many "work-days" Delhi must be losing due to water-borne diseases ! And of course, human suffering to add to that.

Over and above formal question papers, constant day-to-day discussion, reactions, students' diaries, preparation of skits, debates, presentation in the form of charts and comments clearly showed a slow but positive change in the attitudes of the participants.

The students' concern for people living on the river bank, for the gross abuse of the river itself by all concerned, and the alienation of the townspeople came through in everything they did. Ultimately, even when the project was completed, the students went in search of other rivers to study them. This probably was the ultimate success of such a project.

□

FORMULON

FORMULON is a game that can be used with students of the middle school to practice the formulae of several common chemical compounds. It presupposes that the students can identify the symbols of common elements/radicals and know their valencies. You can make the game quite easily yourself, or, better still, you could involve your students in this. Once made, it can serve time and again as a classroom resource.

You need :

- 78 cards representing atoms or ions
- 20 multipliers (2 or 3)
- 2 'Mendeleef' cards or jokers.

The list below indicates one possible selection of elements/radicals. We based this on the students' text book. The number of cards of each kind that were made, is somewhat arbitrary,

For example the students encounter very few compounds of aluminium and hence only three cards were made for this element. The cards were made out of light weight mount board, easily cut with a pair of large, strong scissors and available in most stationery shops. All the one hundred cards needed could be obtained from a single large sheet. The elements were represented by their symbols, correctly written in large letters using felt markers of differing colours. To avoid identification of anions and cations by colour, care was taken to ensure that the same symbol was written in more than one colour.

Eight players can play at a time, and since classes are generally quite large, you can make 3 or 4 sets of cards (or, alternatively, engage the other children in some other activity) so that the whole class can be divided into groups to play simultaneously.

The numbers in brackets indicate the number of cards of each kind that were made.

Hydroge	Hn	(4)
Potassium	K	(4)
Sodium	Na	(4)
Calcium	Ca	(4)
Silver	Ag	(3)
Barium	Ba	(3)
Lead	Pb	(3)
Magnesium	Mg	(4)
Zinc	Zn	(4)
Aluminium	Al	(3)
Copper	Cu	(4)
Mercury	Hg	(3)
Iron	Fe	(3)
Oxygen	O	(4)
Sulphur	S	(4)
Chlorine	Cl	(4)
Nitrate	NO ₃	(4)
Carbonate	CO ₃	(4)
Bicarbonate	HCO ₃	(4)
Hydroxide	OH	(4)
Sulphate	SO ₄	(4)

Multiplier Cards—15 cards with '2' written on them, and
5 cards with '3' written on them.

HOW TO PLAY

Each of the 8 players is dealt 10 cards. The remaining cards (20) are placed face down. The game proceeds more or less like rummy. At each turn, a player can do one of three things :

1. Place a correct formula on the table from the cards he/she has in hand
2. Alter a formula on the table by replacing any one card.
3. Pick a card from the face down pile on the table.

The round ends when one of the players has used up all the cards he/she holds. Others add up the valencies of the cards they have left (Mendeleef cards are valued 8) The players

can play as many rounds as time permits. The player who has used up all his/her cards or with the lowest value (points) in hand is the winner.

The game can be made more complex by adding penalties (eg. pick up an extra card) in case a player puts down a wrong formula. Players may also be required to name the compounds they have placed on the table. Others may point out errors, if any. Senior students may be required to play the game using only the formulae of compounds. Thus formulae for molecules like H_2 , O_2 , Cl_2 are not allowed. Older students may take into account the variable valencies of elements like iron, copper, phosphorus, sulphur and carbon. Teachers might like to include elements like manganese, nitrogen and radicals like ammonium (NH_4), chlorate (ClO_3) etc.

Note that the multiplier cards should be placed slightly below the level of the elements— $BaCl$, not $BaCl_2$. This means the numbers should be written slightly smaller and players should be cautioned against this error.

Another way is to write the multiplier smaller and at the left lower corner of the card.

HOW TO ORGANISE THE CLASS FOR THE GAME :

Divide the class into groups that are more or less of an equal aptitude. Let the students play by themselves after you've explained the game to them. You could walk around the classroom and maybe (unobtrusively) help one or two children who are having problems.

As a follow-up activity, you could ask them

to write out, equations, using some of the compounds they have constructed with the cards.

I first read about Formulon in the November/December 1989 issue of Teacher Plus, a magazine published by Orient Longman. Few details of the game, especially of the distribution of cards representing the various atoms and ions were given and I was not sure whether it would work. This was, in itself, a challenge, it aroused my curiosity. So I worked out the distribution of atoms and radicals given earlier in this article and tried out the game with students of classes VII and VIII. Their response was enthusiastic and there was a demand for more than one set of cards. Interestingly, the so-called "weak students" fared well quite often, sometimes because they knew the subject and sometimes owing to a lucky combination of cards. The bright students, needing more challenge, extended the game further. They used coins and blank dummy cards to represent $+$ and $-$ signs. They were placed on the table, freely available for use by any player. This started up attempts to use the cards to form equations. Successful students got ten bonus points. We are now attempting to evolve a game somewhat like Scrabble. This will require many more cards and details are yet to be sorted out. If such a game works out, I hope to be able to share the idea with the readers of Pathways in the next issue.

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Do not train children to learning by force and harshness, but lead them by what amuses them.

—Plato

'Tis education forms the common mind,
Just as the twig is bent, the tree's inclined.

—Alexander Pope

Human history become more and more a race between education and catastrophe.

—H. G. Wells

INVOLVING STUDENTS IN NON-FORMAL EDUCATION PROJECTS

Feisal Alkazi

A very new idea in the field of education is the need seen to link what is taught in the classroom, with what goes on outside of it. It is for this purpose, among others, that the Government has introduced the idea of SUPW into the school curriculum. With the idea of providing community service as SUPW under the 10+2 system, we at Abner Memorial School have been running the following programme for the last 2½ years.

Twenty centres of non-formal education have been set up by us, mainly in the Old Delhi areas, each catering to a clientele of 25-30 illiterates or school drop-outs. The target group is usually in the five to sixteen age group and is working either as petty labour or at home.

It is these target groups that our students of classes IX and X teach, on three days a week as their SUPW. This is made possible by making SUPW periods (six a week) the last two periods of the time-table thrice a week. The school bus then leaves to drop these students at their centres. Each of these centres is run by two or three children, and every four or five centres supervised by a staff member who does this as a part of the regular schedule.

By and large these centres are located within the houses of our school children themselves, through a few are set up in the space provided by the community.

The target group is collected by our students, who after an initial training, are sent out to conduct a survey under the supervision of staff members.

Training is done through the idea of residential camps, where besides the actual teaching techniques and making aids, the children are sent out to observe and interview the social

reality of rural India, which they can later compare to the urban environment where they run the classes. Approximately three camps of this type are arranged every year.

At each centre, along with the use of a primer "Bal Bharati" (NCERT publication) we have blackboard instruction interspersed with the use of flash cards and flannel graphs, story telling, singing of songs and the playing of games. These games, thirty in all, seek to transform the act of learning into a fun experience. Variations of Ludo, Scrabble, Housey and card games encouraging a creative approach to word building and numeracy retention have been evolved. Along with these role-plays, a weekly visit to use the various facilities that Bal Bhawan provides, succeeds in keeping attendance at our centres at about 60-70%, a very high rate if one thinks of the fact that no one is paying to come to this 'school without walls'.

Such an experience for our school children has not only been a teaching one, but a learning one as well. The child does not only get marks for his work, but is also paid in accordance with his field performance. Personality patterns have radically changed for the better because of the acceptance of responsibility, the authority of having to teach, confidence that the taking of such a class requires.

The children have maintained diaries of the classes taken, and have also attempted to probe various sociological characteristics of the target group—food habits, local ceremonies, relationship of parent and child in such a setting and hurdles in the path of education.

Some excerpts from their own writing are given below :

1. "They told me that in their life they have thrice tasted some fruits, otherwise they had not even tasted fruits. By this we can have an idea of their poverty and miserable life".

—Alok Jain.

2. "When I talked of their girls, they said no well-educated and rich man will come and marry their daughters, if they do get educated. I couldn't respond to this shot".

—Rajesh Verma.

3. "Those who recently got married stopped coming to my centre; the reason is they feel shy and their husbands do not allow them because of orthodoxy. Parents are careless—they do not bother about their children's future".

—Fozia Ali.

4. "I am fully enjoying my work and I have some sort of satisfaction which I only feel and am unable to express".

—Manju Gupta.

Face to face with a reality of a different kind of life, these students have perhaps better understood those vast and looming problems of the country—unemployment, hunger, illiteracy—and done their own small bit towards alleviating them.

(Reprinted from Pathways April 1980. Feisal Alkazi, well known in theatre circles in Delhi is also trained in Social Work and has been involved in Non-Formal education Projects and with Ankur, Society for Alternatives in Education for several years.)



REACHING OUT

- A hand-book for student volunteers on the National Literacy Mission.
- A coordinator's guide to Reaching Out by Feisal Alkazi with Martha Farrell and Priti Jain.

Copies available free of cost from the Adult Education Directorate, New Delhi.

The first of these books, written in a simple, easy-to-read style with several illustrations is aimed at the student who is involved in the literacy campaign. There are facts and figures. Did you know, for example :—

- * In 2000 AD, 55% of the world's illiterates will be in India.
- * Of every children who enter class I, only 23 children reach class VIII.
- * 3 out of every 4 women in India are illiterate.

Apart from background material needed to motivate and create awareness in the student volunteer, there are concrete, practical suggestions on what they need to do :—

- * how to carry out a survey to identify potential learners.
- * how to tabulate and use the results of this survey, to get to know these learners individually.
- * how to find out the "benchmark", or initial level of a learner's understanding.
- * suggestions for actual teaching, including games and stories.
- * problems that might arise and how to tackle them.
- * how to motivate the learners.
- * how to monitor and evaluate learning.

The companion guide is for coordinators of the programme in schools. The details of planning, motivation of the student volunteers, practical details of implementation, monitoring and evaluation are discussed.

Even teachers who are not involved in the literacy mission could make use of the learning games for literacy and numeracy, as well as the ideas for teaching concepts of time and measurement.

LANGUAGE GAMES

Enliven your classes by playing games like these which make drills—a necessary part of all language learning—less of a bore and much more fun. Practice is achieved without protest from pupils. Try them out in whatever language you teach.

The first is an outdoor game. Use it when a colleague is absent and you can take the children out of the confines of a classroom. If they enjoy it, you can encourage the more competent ones to become throwers and give additional language practice to those whose who need it. When? What about playing it for fun during the recess? There is no feeling of pressure, no competition—just learning and practising while having fun. This kind of game gets better as it goes along and the tempo builds up.

1. Catch an Answer

The aim: to practise statements and questions

The whole class sits or stands in a circle. A ball (or anything that can be thrown and is harmless) is thrown to any person. The thrower, standing in the centre, asks a question e.g. What's your name (in case of strangers or a new class)? What is your hobby? etc. The catcher answers the questions. The catcher then becomes the thrower and asks a question of the next catcher.

Variations :

This game can be used to practise :

- Opposites
- Singular and plural
- Spellings (thrower calls out the word and the catcher spells it and if he/she fails to spell it correctly he/she goes out of the circle)

The second game is a team effort which can be played outdoors or in class. As the teams warm up, answers can get to be quite amusing and the teacher can encourage this humour.

2. WHAT WERE YOU DOING LAST NIGHT ?

The aim : to practice

- What and other questions
- Making statements
- Careful listening

The students are divided into teams or pairs. A member of team A asks a question. Team B answers with a statement. Team A then responds with another question. The focus must be on questions beginning with 'what', 'where', 'when', 'why', and 'how'.

The team that fails to either ask an appropriate question or answer the question asked within 20 seconds loses. In the next round Team B asks questions and Team A answers.

e. g. :

Team B—What did you do last night?

Team A—I saw an old friend last night.

B—Where did you meet him/her?

A—He came to my house.

B—When did you ask him to come to your house?

A—I rang him up and invited him over two days ago.

B—Why didn't you go to his house?

A—Meeting at my house is more convenient.

B—How did you spend your time together?

A—We chatted and exchanged a lot of news.

B—What did you eat for dinner?

A—We had just soup and sandwiches.

B—Where did you buy the bread?

A—I bought it from the bakery.

B—When did you make the sandwiches?

A—When we felt hungry.

3. CONSEQUENCES

The aim : to practise

- Writing within the given structure
- Tenses
- Indirect Speech.

This can be played in groups of six. Each group is given a large sheet of paper.

The following format should be written on the blackboard :

Man's name
(met)
Woman's name
(in/at)
place
(He said)
(She said)
(And so they)

The first player in a group begins by writing a man's name on the sheet. She/he then folds it over so that it cannot be seen, and writes 'met' and passes it to the next player. The game continues in this way until six items along with the connecting words have been written down.

When this has been completed each group reads out what they've written.

Needless to say that the results are often very funny.

Variations :

A—If X met Y

(at/in)
Place
(He would say)
(She would say)
(And so they would)

B—If X had met Y

(at/in)
Place
(He would have said)
(She would have said)
(And so they would have)

(You could tell the students to use indirect speech also).

4. NOUGHTS AND CROSSES

The aim : to practise :

- Determiners** : some, any, much, more etc.
- Degrees of comparison**
- Similar sounding words with different meanings** e. g. wait, weight etc.

Divide the class into Team A and Team B. Put up a noughts and crosses grid (9 squares) on the board and make sure that everybody knows the rules of the game. If needed play one or two games between the teams. Students must understand that the aim of the game is to get a row of three noughts or crosses in any direction.

Now draw this grid on the board.

Some	A few	Any
Much	A lot of	Too much
The few	Many	Several

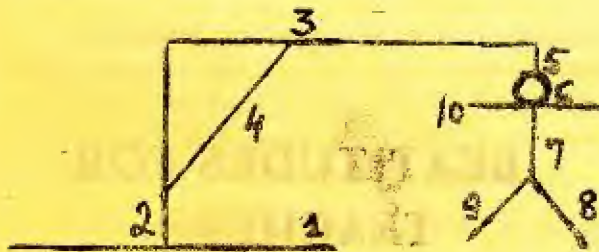
Team A gets 20 seconds to choose a particular square and make a correct sentence using the word or phrase in the square. If the sentence is incorrect, they lose their turn. If it is correct they get a cross on the square.

Now Team B plays the same way. They get a nought for a correct sentence.

The winning team should get a row in any direction.

The last of these games deals with spellings.

HANGMAN



The aim :

- Spellings
- Vocabulary
- Making deductions

Divide the class into team A and team B.
Team A thinks of a word not less than seven

letters. One member of team A comes to the board and makes as many dashes as the number of letters in the word.

Team B calls out a letter. If the letter is contained in the word, it is written in its correct position above the dash. If the letter is not there in the word, a line representing part of the gallows is drawn as shown. Each time the team guesses a letter which does not occur in the word, a further part is added to the gallows. If there are ten wrong guesses, the team which thought of the word wins the game. Letters which occur twice can be guessed twice or when the time is limited they can be marked at the same time.

ONLY ONE

My child

I've often heard you question
and this message is my answer.
When you're concerned about the hungry world,
the millions who are starving...
and you ask.....
"What can only one do?"

... FEED ONE

You grieve for all the unborn children,
murdered every day
and you ask.....
"What can only one do?"

.....SAVE ONE

You're haunted by the homeless souls,
who wander city streets.....
and you ask
"What can only one do?,"

... SHELTER ONE

You weep for those who suffer pain,
disease and hopelessness.....
and you ask.....

"What can only one do?"

.....COMFORT ONE

Your heart aches for the lonely,
the imprisoned, the abused.....
and you ask

"What can only one do?"

.....LOVE ONE

Remember this my child
Two thousand years ago,
the world was filled,
just as it is today,
with those in need.....

And when the helpless and the hopeless
cried out to me for mercy,
I sent a Saviour,
HOPE BEGAN.....

.....WITH ONLY ONE



Anyone who doesn't agree with lively learning couldn't have tried it. To try it is to be sold on the idea, and I'm not talking to the Nursery school teacher. There is nothing so devastating as to be dealing with a group of adolescents who stare balefully at you and defy you to make the lesson interesting. But send them on a path of exploration, investigation and discovery, and they are singing a different tune, and the results are the sort of motivation we dream about...

Unfortunately, most of us discover to our cost that lively learning is a tiring business, because to motivate the student requires some solid preparation, some crafty attention-getting techniques, and lots of encouragement. But then, who said teaching was a cushy job? If you are in it, presumably you enjoy it, and want to continue; how could anyone teach year after year unless they enjoyed doing it? The longer you have been at it, the greater the need for activity, to keep the teacher awake, if nothing else.

Since the bugbear appears to be the syllabus, I suggest we look it straight in the eye, and put it properly in the place. The syllabus is NOT the be all and end all of the world. It is a suggested means to an end. The "end" being learning. But the steps to accomplish that self same syllabus are very squarely in our hands: that means we are not to be intimidated by the syllabus, but to see it as a guideline. Just as a good interior decorator can take a cold room and make it warm, provide light where there is darkness, so too, a good teacher can

BEATITUDES FOR TEACHERS

make a formidable subject look intriguing so that the pupil feels the need to investigate,

The sickening fact is that for us teachers the buck ends here with us. Oh to be a bad carpenter who can at least blame his tools! The teacher is the tool, so there's no way we can point an accusing finger. Its no use: you can't win any argument about material to work with etc.

Here, then, with apologies to the Gospel writers—

Beatitudes for Teachers.

1. Blessed are the positive, for they will achieve the impossible.
2. Blessed are those who can smile, for they look as if they like the pupils.
3. Blessed are those who prepare their lessons for they can set objectives.
4. Blessed are they who emphasize the "do's" and not the "don't", for they will provide motivation.
5. Blessed are those who do not rob children of their childhood, who do not want a miniature adult.
6. Blessed are those who include themselves in evaluation procedures, for they will improve their teaching techniques by leaps and bounds.
7. Blessed are those who make learning fun—because they never lose their zest for life, or deprive their pupils of their spontaneity.
8. Blessed are those who stop looking for excuses—for they are likely to have found the path to good teaching.

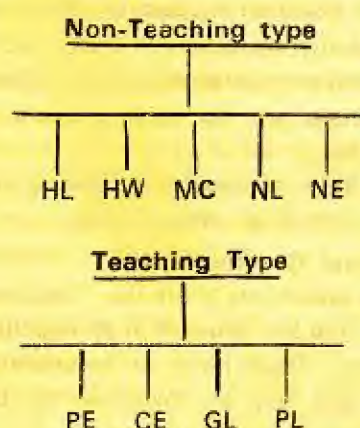
Ayesha Das

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TEACHERS' COMMENTS

Comments can 'make' or 'mar' a student's enthusiasm for studies. It is not always possible to write what we call well thought-out comments'. It is even more difficult to make them 'precise' and 'pedagogically purposeful'.

Comments can be classified into 'teaching' and 'non-teaching' types of comments. The illustration below gives you the first and last letters of each type of comment, which are elaborated upon later.



1. Harmful Comments (HL)

These are rude; they put off the student and build barriers between the teacher and the student. Students start hating the teacher and the subject too.

Examples are :

- * Horrible language !
- * Do you have any idea of the subject ?
- * Does not deserve to be in this class.

2. Hollow Comments (HW)

These are just words and nothing beyond. They read like sentences which have meaning, but these meanings are 'hollow' for one cannot make anything out of them.

Eg. Go through the text once again and also the questions given.

This appears to be an instruction, but it is not clear 'what' is going to happen, 'how' and with 'what effect' if the instructions were followed.

Eg. Could do better.

The student does not know 'how' he could 'do better'; 'what' he should do in order to 'do better'.

3. Misleading Comments (MC)

These put the students on the wrong track - he is asked to do something which does not serve any purpose, or he is made to build untenable perceptions about himself, his activities and the environment in which he acts.

Eg. Re-do

How is he going to re-do it? Is it the presentation that is irritating the teacher? The work will be redone, perhaps neatly, with the same mistakes.

4. Null Comments (NL)

Those that do not confirm, or question, illustrate or explain, refute or approve of anything. These are, all types of zero meaning, non verbal remarks - '?', '??', '=', '—', '!!'. Students cannot decode them. Such comments can become teaching comments by giving each of these symbols a predetermined verbal meaning known to both students and teachers. Instead of wasting time repeating the same comments several times, these predetermined symbols can be explained once and used several times to have significant psycho-pedagogical advantages.

5. Negative Comments (NE)

Negative comments are those that express negative facts, concepts, explanations, illustrations. These are the correctives most needed by the student so that he is guided away from mislearning. These type of comments can be classified as teaching comments if they are accompanied by constructive suggestions.

Eg. Your answer is too brief and incomplete.

If this is supplemented with a **constructive comment (CE)** like one given below, it would help the student.

You could have elaborated on the following points :

i. ii. iii.etc.

Eg. He never submits his homework on time.

If this is supplemented with a CE comment, viz, 'Kindly supervise to see that he develops proper study habits', the parents would then be guided in the right direction.

6. Positive Comments (PE)

These approve of the stand taken by the student. They may indicate that his answer is upto the mark, is original, etc.

Such comments encourage the students to repeat and better his performance. Even symbols like giving 'stars' as credits, would reinforce the child's interest in getting better results. The student would feel he has reached the teachers' wave length and therefore, would do his best. If these too are supported with CE comments, they could be very helpful indeed.

Eg. (PE) 'Your illustrations are very good'.
Supported by (CE)—'However, if you used a sharp pencil, you could have achieved greater accuracy'.

Eg. (PE) 'Alka shows a lot of enthusiasm in participating in all class activities'.
(CE) 'However, she should not allow her enthusiasm to affect her studies'.

7. Constructive Comments (CE) Dealt with, earlier.

8. Global Comments (GL) These are overall comments, perhaps explaining a grade, a performance etc. These comments should cover all aspects of the work/child's personality, especially in the case of remarks in a report. Care should be taken to see that there are no contradictions in these comments.

Eg 'B' is a very hard working girl. She needs to work harder.

9. Personal Comments (PL)

These comments break the 'isolation' or the 'distance' that the student may experience with the teacher. These have to be warm and well-meaning and help in building up the much required rapport between them.

Finally, a word of warning to teachers. They should remember that.

- comments mean a world to the students.
- Parents also read the comments.

Hence the teacher should take care to check on.

- 'What' he/she writes
- 'How' he/she writes it
- 'Why' he/she writes it

Next time, when you, as a teacher, write remarks on an assignment or in a progress report book, think carefully, about what you write. Classify your comments. This reflection, within yourself will help you to become a **good commentator** and therefore a **good teacher**.

Saroja Sundararajan

WHY NATURE GAMES ?

There are hundreds of games that everybody can play-games in which laughter, curiosity and sharing experiences are more important than a score. Games that lead somewhere; that awake a sense of wonder, interest, curiosity — "I wonder why ?" "What if ?", "Why does ?"

Nature, too, is all around us — for those who see, hear, feel, taste and touch. It's the pigeon on the city street, the pet dog, the flower in the windowbox, the icicle from the roof, the oil stain in the road, the rainbow in the sky.

It's the squish of mud between the toes, the taste of wild berries, the sound of a scolding squirrel, the feel of rough bark, a thorn, or a milkweed pod.

We sometimes forget that a child is new. Almost everything he does is a first : the first time he whistles; the first time he lights a fire; the first time he's blindfolded in a game; the first time he learns a new word, feels suspense or enjoys applause. The first time he sees a butterfly or snow, or tastes ice cream; or hears a bird sing or feels the warm softness of a puppy.

Those firsts should be fun. They should lead on to seconds, and thirds and on and on. They will, as long as that child keeps sense of wonder.

Childhood, in this age of accelerated maturity, is growing shorter. Pressures are growing stronger. Children need periods of informal, relaxed play more than ever. They need simple, interesting games that provide exercise for growing muscles, stimulation for growing minds, and outlets for growing individualism. Games can do all this and more. Games can provide a

contact, a bridge, to bring the child closer to the world of nature.

As the world shrinks, as production of food, shelter and clothing becomes and more complex, the natural environment of the child shrinks too. The supermarket replaces the raising and processing of farm and dairy products. The highways replace the country lanes. The bulldozer levels hills and trees.

A child's world is no longer bound by home, school and church. The walls of the world are down. Today's child in the average home has seen a satellite being fired, has watched astronauts orbit and rendezvous in space. And that same child may never have seen a fish in a brook, a wren building her nest, or a spider web gleaming with dew in the early morning.

He has heard the sonic boom of a jet breaking the sound barrier, but he may never have heard the hooting of an owl at night or the crowing of the cock at dawn. He has seen neon lights but not a sunrise. He may have travelled far distances on planes and in cars but never straddled a horse or hiked a mountain trail.

He has eaten slices of watermelon on a hot day and has bought a pumpkin at the market but he may never have seen a watermelon or pumpkin on the vine. He may never have shelled peas or sucked an ear of corn, seen a beehive, smelled pine needles, nibbled a sasafraz twig, held a frog in his hands, built a fire, slept overnight in a tent.

He can see an elephant in a zoo, but he has never have seen a live mouse. He can study a wildlife diorama of stuffed animals in a museum, but he may never have stroked the soft ear of a live rabbit. The city child who sees the heavens from an easy chair at the planetarium may never have lain on his back on a

blanket on a hill and watched the warm starry sky of the summer night. The backyard grill has replaced the mystery of the open campfire.

The feeling of being part of the earth, at home in its natural surroundings, responsible and interested in its conservation and preservation, can die out, unless, like Tinker Bell in Peter Pan, it is revived by love. This love of nature, this enjoyment, can be taught informally, through the use of the right games.

And that's where we can help—by making nature fun. And that's not hard. It doesn't take an expert. All it needs is an

unhurried approach, a respect for the child as a person and a child's eye look around at all the possibilities nearby.

If we are aware of the simple wonders around us, and if we share this awareness, we can help the child develop one of his greatest gifts—this gift of wonder. It's not important that we know all the right answers. Raising the right question at the right place, with the right child is important.

—Virginia W. Musselman

A Hundred Year Old Rhyme.

Three little words you often see
Are articles *a, an* and *the*,
A Noun's the name of anything,
As *school*, or *garden*. *desk* or *swing*.
Adjectives tell the kind of noun,
As *great*, *small*, *pretty*, *white* or *brown*.
Instead of nouns the Pronouns stand—
His head, *her* face, *your* arm, *my* hand,
Verbs tell something to be done—
To *read*, *count*, *laugh*, *swim*, *jump* or *run*.
How things are done the Adverbs tell—
As *slowly*, *quickly*, *ill* or *well*.
Conjunctions join the words together—
As men *and* women, wind *or* weather.
The prepositions stand before
The noun, as *in* or *through* the door.
The interjections show surprise—
As *oh*! how pretty!, *ah*! how wise.
The whole are called nine parts of speech.
Which *reading*, *writing*, *speaking* teach

About a hundred years ago children were being taught this little rhyme. It assumes that the definite and indefinite articles are separate from the other parts of speech, and is a useful way of remembering the functions of the words which are found in sentences. Not, you may say, entirely comprehensive, but at least better than a complete ignorance of the functions of words. □

EVERYTHING about mankind in paradox. He who strives and conquers grows soft. The magnanimous man grown rich becomes mean. The creative artist for whom everything is made easy nods. Every doctrine swears that it can breed men, but none can tell us in advance what sort of men it will breed. Men are not cattle to be fattened for market. In the scales of life an indigent Newton weighs more than a parcel of prosperous nonentities. All of us have had the experience of a sudden joy that came when nothing in the world had forewarned us of its coming—a joy so thrilling that if it was born of misery we remember even the misery with tenderness. All of us, on seeing old friends again, have remembered with happiness the trials we lived through with those friends. Of what can we be certain except this—that we are fertilized by mysterious circumstances? Where is man's truth to be found?

Truth is not that which can be demonstrated by the aid of logic. If orange-trees are hardy and rich in fruit in this bit of soil and not that, then this bit of soil is what is truth for orange-trees. If a particular religion, or culture or scale of values, if one form of activity rather than another, brings self-fulfilment to a man, releases the prince asleep within him unknown to himself, then that scale of values, that culture, that form of activity, constitute his truth.

From *Wind, Sand and Stars* by Antoine de Saint-Exupéry